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Decade of Declining Death Rates

The postwar decade has brought a demographic revolution of immeasurable consequences. Population growth rates have jumped to record highs in various parts of the world because of changing patterns of births and deaths. Millions of people migrated from their native lands to other countries in the aftermath of World War II. This is the first of a series of issues which will analyze and interpret these historic demographic changes.

No other decade in world history has brought such revolutionary, far-reaching changes in the patterns of death as has the decade of 1946-1956.

Rapidly falling death rates in many of the world's economically underdeveloped areas have touched off a sudden and unprecedented acceleration in the rate of population growth. From 1946 to 1956, total world numbers increased about 350 millions. That is more than the estimated population of the entire world in the year 1500.

During the decade of 1930-40, world population grew by about 240 millions. An average of about 24 million people were added each year. In 1956, approximately 40 million people were added. That represents a 67 percent gain.

Modern medical and public health techniques, readily available only since the end of World War II, have cut death rates drastically in many of the underdeveloped areas where high death rates previously cancelled out high birth rates and held population growth in check. These new techniques cut death rates by about 30 percent in only one year in at least one country, and very considerably in many others. Sharp reductions are to be expected in still other countries.

But birth rates remain at the traditionally high levels in these underdeveloped areas because cultural mores, religious and other taboos perpetuate to a reproductive pattern that was essential for survival hardly more than a generation ago. When birth rates finally do start to decline, the process has always been slow.

During this transitional period, when a population shifts from a pattern of "negligible . . . growth characterized by *high* birth and death rates to one of equally little growth based on *low* birth and death rates," death rates invariably decline before, and faster than, birth rates.[1] Some of the ex-

perts call this transition period the "demographic gap."

The populations of most western nations have at least tripled while passing through this period. Today, two-thirds of the world's people live in the underdeveloped areas caught in this demographic gap. The increment on such a large "principal" would be tremendous if population were to triple during the transition period. Population is now growing more rapidly than food production in many countries, so gains in living levels are becoming more and more difficult to realize.

It is difficult to grasp the full impact of the decade's sudden shift in the pattern of death unless the trend is reviewed against the more leisurely demographic transition of the western world. That transition which began two centuries ago is just now being completed in only a few countries of northern and western Europe. After a prolonged period of rapid growth, population in those countries is now growing very slowly.

The evolutionary process of the demographic transition has been greatly accelerated. Death rate reductions which took over a century and a half in the western world have now been compressed into a decade, even less.

The jet-like speed-up in efficiency of mortality control presents this curious paradox: One of the greatest achievements of the scientific genius of man could turn into a curse with direst consequences.

Unless human sex mores can be changed quickly so that births and deaths will balance at a new low level, too-rapid population growth may bring ever-growing misery to more and more millions living in those areas where population presses heavily on resources. The danger that traditional Malthusian checks on population growth—disease, famine and war—will again come into play to redress that balance is very great.

Some Asians are now awake to the threat which high fertility poses in this modern era of low death rates. So are some Latin Americans. Even in that high-tension area, the Middle East, understanding of the problem is beginning to filter through the turmoil. These examples give reason to hope that the nature of the dilemma may be universally apprehended in time. If it is, people will find ways to curb high birth rates. Will universal awakening come in time, to the West as well as the East?

TRANSITION IN WESTERN INDUSTRIAL NATIONS

Before the middle of the eighteenth century, recurring plagues and epidemics made survival precarious for those living on this earth. High death rates held population growth down in all countries. A large proportion of each generation died in infancy, and life expectancy at birth was probably no more than about 35 years.[2] Any population increases which resulted from a reduction in death rates were eventually erased by famine, epidemics, or both.

The new era, which the late Norman Himes called the "Vital Revolution," began about 1750. Revolutions in biology, medicine, industry and agriculture laid the foundation for the many scientific and technological advances which have helped to improve the living conditions of the masses. These improvements brought substantial reductions in mortality, particularly in infant mortality. This led to the demographic transition which appeared about two centuries ago and spread slowly throughout the western world.

In each country, this demographic transition followed a similar pattern. Death rates began to fall slowly, but birth rates tended to remain at traditionally high levels for several generations. In most countries, birth rates did not begin to decline until near the end of the 19th century. As a result, European populations experienced mushroom growth for a century and a half. It has been estimated that the population of Europe and "Europe overseas" increased almost fourfold between 1750 and 1900.[3]

The decline of birth rates was slow at first; later it accelerated. By the early 1900's, the trend had reduced appreciably western Europe's rapid population growth.

By 1930, the demographic transition in some western industrial nations appeared to have run its full course. Then the birth rate in most of these countries was only slightly higher than the reduced death rate. Population grew slowly, if at all.

In the early 1930's, the rate of natural increase (annual excess of births over deaths) was only 0.7 percent in the United States, 0.5 percent in Germany, 0.3 percent in England and Wales and in Sweden, and 0.1 percent in France. From 1935 to 1939, France's population actually declined since there were not enough births to offset deaths.[4]

All-time low birth rates were recorded during the 1930's, and they remained stable or increased only slightly until the later years of World War II when an upward trend emerged. It became quite striking during the early postwar years. The peak of the "baby boom" was recorded in most western countries in 1946 or 1947. In a number of these countries, the increase in birth rates from the lowest level of the 1930's to the postwar high amounted to more than 50 percent. By 1950, the birth rates of most western European countries had declined sharply from the "baby boom" highs and were near or below the 1930-34 levels.

But in Australia, the United States, New Zealand, and Canada, birth rates have declined only slightly from their postwar highs. As a result, these four countries are now experiencing an annual rate of natural increase of 1.4 to 2.0 percent. That compares with a rate of from 1.0 to 1.4 percent in Norway, Spain, Portugal and the Netherlands, and rates of less than 1.0 percent in all other western European countries.[5]

A subsequent issue of the *Bulle-*

tin will analyze these western birth rate trends.

TRANSITION IN UNDERDEVELOPED COUNTRIES

Not until the end of World War II did the demographic transition begin in the majority of the economically underdeveloped areas of the world. These include most of Asia, Africa and Latin America and about two-thirds of the world's people.

The course this transition is taking there today is quite different from the course it took in western industrial countries. This is because modern technology has miraculously cut the time necessary to achieve a sizeable drop in death rates. Reductions which came slowly over a century and a half can now be achieved in less than a decade.

Before 1946, population growth in these underdeveloped areas was held in check by traditionally high death rates. Now, even though few countries of Asia, Africa and Latin America have accurate vital statistics, it is clear that varying degrees of control over mortality exist almost everywhere on earth. Completely uncontrolled death rates can be found only in the most remote areas of Africa and Asia.

Table I shows the postwar trend in crude death rates for a number of underdeveloped countries where data are fairly accurate. These rates seem to confirm the findings in a study of postwar mortality trends in a number of underdeveloped countries made by Dr. George J. Stolnitz of the Office of Population Research at Princeton:

TABLE I: CRUDE DEATH RATES‡ OF SELECTED COUNTRIES, 1946-1955§

	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955
AFRICA										
Algeria (Muslims)*	.....	27.4	24.9	23.2	21.2	20.9	18.9	19.2	17.4	16.7
Egypt†	31.2	25.5	22.9	23.3	22.1	22.1	20.5	22.3	.....	.....
Mauritius (excluding dependencies)	29.3	20.0	23.8	16.6	13.9	14.9	14.8	16.1	16.0	12.9
ASIA										
Ceylon	20.3	14.3	13.2	12.6	12.6	12.9	12.0	10.9	10.4	11.0
Colony of Singapore	.....	13.3	12.4	11.8	12.1	11.9	11.2	10.3	9.3	.....
Federation of Malaya	20.0	19.4	16.3	14.2	15.8	15.3	13.6	12.4	12.2	11.5
Japan	17.6	14.6	12.0	**11.6**	10.9	10.0	8.9	8.9	8.2	7.8
LATIN AMERICA										
British Guiana	15.6	14.8	14.2	13.3	14.6	13.5	13.5	13.3	12.4	11.9
Chile	**16.6**	16.1	16.7	17.3	15.0	15.0	13.0	12.4	13.1	12.8
El Salvador	17.6	17.2	16.0	15.4	14.7	15.1	16.3	14.7	15.0	13.9
Guatemala	24.6	24.7	23.5	21.8	21.9	19.6	24.2	23.2	18.5	20.5
Mexico	19.1	16.4	16.7	**17.6**	16.2	17.3	15.0	15.9	13.1	13.3
Puerto Rico	12.9	11.8	12.0	10.6	9.9	10.0	9.2	8.1	7.6	7.1
Venezuela	14.7	13.4	12.8	11.9	10.9	11.1	10.8	9.9	10.1	10.2

*Thirty largest cities †Health bureau areas ‡Per 1,000 population

Making allowances for underregistration, it appears that death rates in these areas ranged from about 20 to 30 per 1,000 shortly before the war. By 1954, although the high-to-low ranking of the death rates was practically unchanged, the figures had fallen to something like 10 to 16 per 1,000. The largest reported decline was nearly 11 per 1,000 and the smallest over 6 per 1,000. . . . Western vital history provides few precedents for this pace of events. The decennial declines encountered in the nineteenth-century records were rarely above 3 per 1,000 and generally well below this figure. The main declines in Western death rates came either between the 1890's and about 1910 or between 1910 and 1930. Yet Germany, with the largest changes in both periods, shows declines of only 5 and 6 per 1,000, respectively. The second largest declines, in the Netherlands, were between 4 and 5 per 1,000 and nearly all other changes in either period were between 2 and 4 per 1,000.[7]

By no means all of the underdeveloped countries have reduced their death rates to 16, or below. Some of the largest — Mainland China, India, Indonesia and Pakistan — have higher death rates. But there are few areas in the world where at least some degree of mortality control has not yet been achieved.

HOW POPULATION GROWTH RATES ACCELERATE

In many areas, the postwar attack on high mortality has been miraculously effective because the technological and medical discoveries of the western world have provided a formidable arsenal for preventing death during infancy, childhood, and the early decades of life. It was in the younger ages that the mass killers of the past took their greatest toll. The death-fighters of recent decades have extended the area of attack. DDT and other insecticides, vaccines, sulfa compounds, antibiotics are commonplace today. The sanitary engineer has taken his place alongside the doctor in implementing this miraculous conquest of early deaths.

Many of the new techniques are inexpensive and simple to use. When they are applied in the high death and birth rate countries, death rates decline quickly but high birth rates remain high. The resulting gap between births and deaths causes population to grow very rapidly. In those countries where modern health programs have been most succesful, the average annual rate of growth ranges from about one and a half to more than three percent. Even in areas where present rates of growth are not alarmingly high, the potential for very rapid growth is very real.

Ceylon provides a case history, complete with adequate vital statistics, of just how postwar public health programs touch off alarmingly rapid population growth in high birth and death rate countries. An anti-malaria campaign based on the residual spraying of DDT was launched there in 1946. The cost of this project amounted to only about 15 cents per capita per year, but its results were amazing.[8]

In one year, the Ceylonese death rate dropped by almost one-third, from 20.3 (1946) to 14.3 (1947). During the same year, the expectation of life at birth is estimated to have jumped from about 43 to over

52 years. It took most western countries half a century to achieve such a gain in longevity![9]

Ceylon's death rate has continued to decline at a rapid rate: from 14.3 in 1947 to 11.0 in 1955. Expectation of life at birth increased by more than two years between 1947 and 1948; by more than one year in 1949; and at an annual average rate of almost 0.7 of a year between 1949 and 1953.[10]

The Ceylonese birth rate has hovered around 40 during the entire postwar decade. As a result of the high birth rate and a falling death rate, Ceylon's rate of natural increase jumped from about 1.8 percent in 1946 to 2.7 in 1955.[11] Should this rate of growth continue, Ceylon's population will double in only 26 years.

Currently, India is probably growing at a rate of about 1.5 percent a year, approximately the world rate and also about the same as the rate of the United States. But modern public health programs have so far reached comparatively few of the Indian people. When they are widely applied, India's growth rate could reach Ceylon's unless birth rates were reduced, simultaneously and drastically, to counterbalance death rate declines.

HISTORICAL SPEED-UP IN GROWTH RATES

The demographic transition spread from western Europe in the 18th century to the underdeveloped areas in the mid-twentieth century. It is now causing world population to grow at an unprecedented rate. See Table II.

During the past century, the rate of world population growth has been greater than in all the previous ages that the human race has existed on earth. And that rate of growth continues to accelerate even more rapidly. Julian Huxley recently discussed the speed-up in these words:

> . . . Population, as Thomas Malthus pointed out in 1798, tends to grow not arithmetically but geometrically—it increases by compound interest. Until well into the present century the compound rate of increase remained below 1 per cent per annum, [it is now 1.5 percent per annum]. What is more, this acceleration of increase shows no sign of slowing up, and it is safe to prophesy that it will continue to go up for at least several decades.
>
> In short, the growth of human population on our planet has accelerated from a very slow beginning until it has now become an explosive process. Before the discovery of agriculture, about 6,000 B.C., the total world population was probably less than 20 million. It did not pass the 100 million mark until after the time of the Old Kingdom of Egypt, and did not reach 500 million until the latter part of the 17th century. By the mid-18th century it passed the billion mark,

TABLE II. WORLD POPULATION AND RATE OF POPULATION INCREASE SINCE 1650

	World population[12] (in billions)	Average annual rate of increase between periods	Years for population to double
1650	0.5 - 0.6	———	———
1750	0.7	0.3%	231
1850	1.2	0.5%	139
1950	2.5	0.8%	87
1956	2.7	1.5%	47

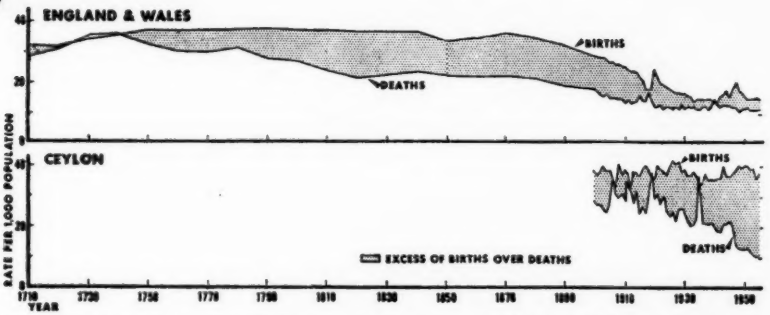


FIGURE 1: BIRTH AND DEATH RATES OF ENGLAND AND WALES, 1710-1955, COMPARED WITH THOSE OF CEYLON, 1900-1955[13]

The shaded areas in the graphs show the timing and extent of the "demographic transition" through its entire course in England and Wales and its much more rapid initiation in Ceylon. Data prior to 1900 are ten-year averages.

and in the 1920s it rose above two billion. That is to say, it doubled itself twice over in the period between 1650 and 1920. The first doubling took nearly two centuries, the second considerably less than one century. Now, at the present rate of acceleration, the population will have doubled itself again (from the 1920 figure) by the early 1980s—i.e., in the amazingly short space of 60 years.[14]

DECADE SPEED-UP IN GROWTH RATE

During the past decade, the numerical increase in world population amounted to about 350 million souls. That exceeds the population of the entire planet four and a half centuries ago when approximately 300 million people are believed to have lived on the earth.[15]

Should the current annual growth rate of 1.5 percent seem small, numerically it means about 40 million more people each year, over 100,000 each day. Should this rate continue, the population of the world will double in less than half a century.

For the benefit of those who tend to view the current rate of world population growth placidly, it should be pointed out that had the population of the world grown continuously at this rate since the time of Christ, for every person on earth today there would now be about one million people.[16] In population density that would mean more than 50 million people on every square mile of the earth's entire land surface.

Rapid increase in population growth creates major economic and social problems in any country, even in the most advanced industrial nations where living levels are highest. Population growth is most rapid today in the very regions where economic development is most retarded. Many of these areas have been densely populated for generations, some for centuries. Current trends indicate that they must support even denser populations in the future.

For example, population is growing rapidly in such agrarian areas as the Nile Valley, Java and the river valleys and deltas of southern and eastern Asia where people depend almost entirely on agricultural production for their livelihood. Population density is already much greater there than it is in either Belgium or Great Britain, two of the more congested areas of Europe, where highly developed industrial and commercial systems permit the exchange of manufactured products for food and other essentials necessary to support the population at a high level of living.

In actual numbers, the growth potential of the underdeveloped areas today is tremendous because the population "principal" in those areas is so large. In contrast, the four-fold increase of Europeans between 1750-1900 would be puny.

A WESTERN DEMOGRAPHER'S APPRAISAL

Some six years ago, Dr. Frank W. Notestein, the eminent demographer who is Director of the Princeton Office of Population Research, recognized the effect which partial modernization was having in underdeveloped areas:

> [In many underdeveloped areas] . . . colonial and semicolonial populations have borrowed or have had forced upon them a few of the Western techniques of government, transportation, agricultural production, and epidemic control. These have reduced mortality somewhat, but have left the majority of the people untouched in the essentials of their daily lives. The people work and live in much the same conditions as their ancestors did before them, and retain the familiar organizations, beliefs, and interests that have served throughout the ages to maintain high birth rates. Borrowed techniques and borrowed technicians have enhanced economic production with a minimum of disturbance. Unfortunately, the very lack of disturbance testifies to the failure of the new techniques to develop the deep roots in the social order that a healthy transplant requires. It testifies also to an absence of the social reorientation from which the small family ideal may be expected to emerge.[17]

The events of the past six years have more than confirmed Dr. Notestein's observations. Partial modernization in underdeveloped areas has failed to alter the traditional high fertility. Spectacular reductions in mortality in limited areas highlight this hair-trigger demographic instability.

THE VICIOUS CIRCLE

The major dilemma is that modernization programs set off a vicious cycle in underdeveloped areas. Immediate advances in public health are reflected in falling death rates and rapid population growth. That rapid growth then retards desperately needed economic development. In the more technical words of a study by the Population Division of the United Nations:

> First, . . . high birth rates create a heavy load of dependent children per adult. This makes it difficult to save enough, over and above what is required for the support of the workers and their dependents, for needed investments in equipment for economic development. It also seriously complicates the problem of providing the children with the education that is essential for social and economic progress in the long run. This aspect of the population problem is common to all the under-developed countries.
>
> Second, falling death rates with high

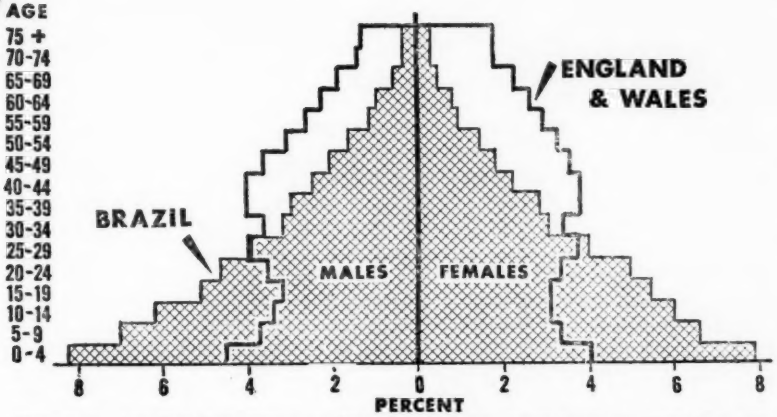


FIGURE 2: AGE-SEX STRUCTURE OF BRAZIL COMPARED WITH THAT OF ENGLAND AND WALES, 1950[18]

Brazil, just entering the demographic transition, has an age distribution which is in sharp contrast to that of England and Wales. Brazil's "age pyramid" has a much broader "youthful" base.

birth rates bring about a rapid increase of population. Large investments must be made to keep the growing numbers of workers equipped with the same inadequate amounts of working equipment per man as they have had in the past. So the possibilities for investments which would improve the equipment and raise productivity per worker are diminished. This speeding up of population growth, aggravating the shortage of capital, is now taking place in very many underdeveloped countries, wherever successful public health campaigns have greatly reduced death rates.

Third, many of the under-developed countries have an excessive density of agricultural population in relation to the area of cultivated land. The average farmer has too little land to make a satisfactory living for himself and his family. Not all under-developed countries face this difficulty, but it exists in some which have large amounts of unused land, as well as in those where nearly all the cultivable land is fully occupied. At least some of the countries now suffering from acute agricultural overpopulation might be able to employ all their numbers to good advantage, and benefit in the long run from a substantially larger population, if they were better equipped to utilize the land resources which they possess, or if they could industrialize. But neither the necessary improvements of agriculture nor the development of industry can easily be accomplished, and the difficulties are increased by high birth rates and rapid population growth.[19]

As Figures 2 and 3 imply, the economic dilemma is further complicated by the very large proportion of children in the underdeveloped countries which are experiencing these sudden accelerations in growth. In Ceylon, for example, almost 40 percent of the population is under 15, as compared with only about 20 percent in western Europe. This large proportion of nonproductive persons adds to the economic difficulties, and puts a heavy load on any program to reduce illiteracy, which is very high in most of these countries.

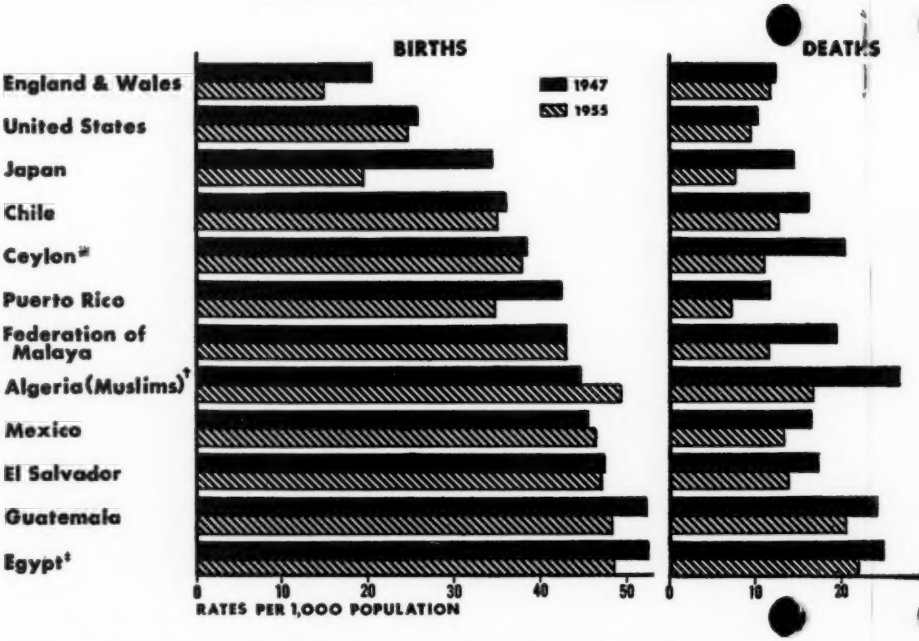


FIGURE 3: RATES OF BIRTHS, DEATHS, AND NATURAL INCREASE, AND MAJOR AGE GROUPS OF THE POPULATIONS OF SELECTED COUNTRIES[20]

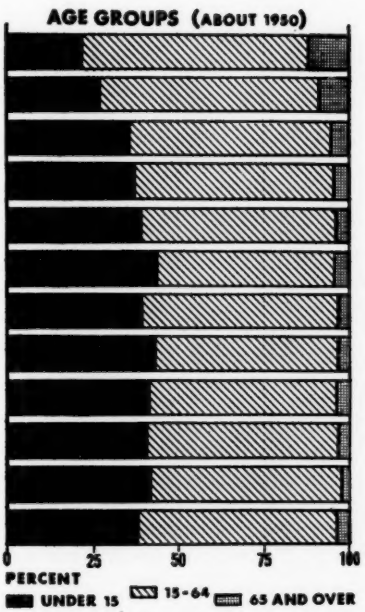
The sharp decline in the death rate in some of the underdeveloped countries since 1946 has greatly increased the rate of natural increase. The proportion of children under 15 is low, and the proportion of people 65 and over is high in those more advanced countries which have completed the demographic transition.

*Rates are for 1946 and 1955.
†Rates are for the 30 largest cities of Algeria.
‡Rates are for 1947 and 1953 and cover areas in which a health bureau is operating.

POPULATION INCREASE VS FOOD SUPPLY

Economic development has not kept pace with population growth in a number of underdeveloped areas. The most recent survey of the U. S. Department of Agriculture finds that for the world as a whole, food production since 1950 just kept pace with population growth.[21] Since two-thirds of the earth's people are seriously underfed, this is not adequate.

Furthermore, all the experts concur that in those parts of the world where food shortages are most severe, the situation is growing worse, rather than better. In several countries, notably in India, Ceylon, Indonesia and North Africa, the Food and Agricultural Organization of the United Nations finds that postwar per capita levels of calorie consumption are less than they were before World War II



even though agricultural production has considerably increased.[22] In other words, population growth has outrun the increase in the food supply during the postwar decade.

Actually, living levels have not improved appreciably for the masses in the underdeveloped areas. While there have been improvements in public health and sanitation, there have often been little or no improvements in food, shelter or clothing. The prospects for substantial gains are bleak indeed "when one takes a realistic look at the numbers of people in relation to resources and the way population growth tends to respond to improved conditions."[23]

Economists consider a sustained average annual increase of three to four percent in gross output to be very good for an industrialized country like the United States "where people are well educated, where institutions for capital formation are well established, and where traditionally there is a strong urge to work hard and get ahead."[24]

The populations of many underdeveloped countries of Asia, Africa and Latin America are now growing at an average annual rate of from two to three percent. Living level improvements are possible only when annual production increases exceed the rate of population growth. Few — if any — of the economically backward countries can achieve such increases for any considerable period of time.

MARKETS NOW MORE COMPETITIVE

The economic climate of the world today is widely different from that of the past when western industrial nations were going through the demographic transition. Then there was a relatively favorable relationship between people and land. When the Industrial Revolution emerged in England, the whole world was waiting to provide her with food and raw materials for her factories in exchange for her manufactured goods. The new world awaited colonization and eventually became an outlet for the surplus population of English cities and towns.

Today's underdeveloped countries will find little or no such economic "slack" to absorb the tremendous population growth inherent in the transition period. Dr. Rupert Vance of the University of North Carolina has observed that "each nation as it industrialized closed its markets by tariff, turned its agricultural production in the direction of its own urban markets, and withdrew cheap food from the international markets. Germany found the course of industrialization harder than Britain. Japan was not able to repeat the course of European industrialization, and India and China as they modernize will not find themselves in as favorable a position as Japan. The amount of demographic slack progressively lessens as industry expands all over the globe."[25]

EMIGRATION OPPORTUNITIES NOW MORE LIMITED

During the 19th and 20th centuries, overseas emigration from Europe helped to solve many of the economic problems associated with overpopulation. It has been estimated that the population of Europe "in 1910 was 88 million less than it would have been if there had been no emigration after 1800."[26]

Today, the already overpopulated, underdeveloped countries have no such escape valve. A United Nations study discusses the lack of emigration opportunities in these words:

> Today the densely populated underdeveloped countries have much less opportunity to ease their difficulties [through emigration]. . . . There are no longer any great "new worlds" with vast areas of good farmland to be had for the labour of clearing and ploughing it. Some lands are still available to immigrants in certain parts of the world—South America and Australia, for instance—but they are generally less productive and more costly to develop than the lands which the European emigrants took up earlier. Even where the land itself can be acquired cheaply, a substantial investment is generally required to cover the cost of transporting the migrants, outfitting them on their new farms with stock and equipment, maintaining them until they reap their first harvests, building their new homes and roads, schools, etc., for their new communities. Sometimes there is a need for further investments in irrigation, drainage, elimination of pests, etc., to make the land productive and habitable. The people of the under-developed countries can ill afford to bear these costs. On the other hand, the countries of immigration prefer to encourage settlers from more wealthy countries, who can generally bring more capital, a superior education and better knowledge of modern agricultural techniques with them. . . . In effect, [the nationals of underdeveloped countries, especially Asians] . . . are

virtually excluded from some of the most important immigration countries.

On the other hand, if emigration were to have any great effect on the trend of population in some of the largest, most densely populated under-developed countries, like India, China and Java, it would not only have to equal, but to surpass by a wide margin the highest emigration rates ever experienced in European countries during the era of the great transatlantic movement. Such a feat appears to be entirely out of the question under the conditions that exist in the world today.[27]

THE TRAGIC PARADOX

The jet-like speed-up in the efficiency of mortality control is undoubtedly the most significant development of the postwar demographic revolution. But it also poses a tragic paradox.

Certainly reduction in mortality and increased life expectancy are among man's greatest achievements of the ages, but the glory of these achievements will be considerably dimmed if infants and children saved today are to die of starvation or diseases of malnutrition in later life. It is unfortunate that living levels are often lowest where gains in mortality are greatest.

Now, two-thirds of the world's people live in underdeveloped areas where rapid population growth threatens. Living levels are low and may sink even lower. Tensions created by population pressure are a constant threat to world peace in many areas. The Middle East is a classic example today.

During the demographic transition in the west, fertility declines have never been sharp enough to close the gap between fertility and mortality in less than a century. During the lag, populations tripled.

If the already huge populations of China, India and the other underdeveloped nations were to triple in numbers during the next century while passing through the demographic transition, totals would be astronomical. Without a concomitant expansion in the means of production, population growth of such magnitude would almost certainly be halted by the Malthusian checks of famine, disease and war.

AN INDIAN SOLUTION

Mr. R. A. Gopalaswami, Registrar General of India, has written that while no one can be held responsible for a birth rate, "the number of births which occur to married couples is *ex-hypothesi* controllable by them." In a penetrating analysis of the course the demographic transition is taking in his country, he writes:

It will be said that this is an excessively pessimistic appraisal of the future based on a wrong approach to the whole problem. The right approach, it will be said, is to base ourselves on the experience of other countries (notably Great Britain) which developed much greater dependence on imported food supplies when their population was expanding rapidly. These countries have not only not come to grief, they have raised the nutritional standard of their people. Why should we fail to do the same? The right answer to our problem, according to this view, is not to concentrate excessively on forcing the growth of agricultural productivity but to industrialize the country more rapidly, export more and more of our industrial products; and buy enough food from foreign countries to meet the needs of our growing numbers without stinting.

It is true that Great Britain developed in this way during the last century. It is equally true that the determination of certain other countries to develop in the same way created stresses and strains which led to two World Wars. It seems most unlikely that any other country with a larger and growing population will develop in that way hereafter. Great Britain was fortunate because she was first in the field and developed her industries and foreign trade at a time when the productivity of cultivation in the world as a whole was developing at a faster rate than the population of the world as a whole. It was then possible for productivity of cultivation to move so fast mainly because a whole New World was being opened up by modern transportation. Virgin land with fertile soil was plentiful and yielded an abundant return in relation to the effort and expense involved in bringing it under cultivation. We have seen in earlier chapters that there are a number of different indications all of which point to the fact that this was an exceptional phase of human history, and that anyone who regards it in the light of a recurring normal feature of human life has not got the correct perspective. During the last few decades the population of very large parts of the world has been growing faster than the productivity of its cultivation, and—over increasingly large areas—development is ceasing to come about "naturally"; it has to be forced. Food exporting countries tend to get fewer and their exportable surpluses tend to become less abundant. Food importing countries tend to increase, as also the quantities they need to buy. In these circumstances, food importing countries should, in their own interests, limit their demands voluntarily, co-operate in buying available supplies at fair prices and sharing them equitably according to need. If instead of doing this, they adopt the policy mentioned above, *viz.*, to force the exports of industrial products and rely on the purchasing power thus acquired in order to back steadily increasing demands for food, they would only succeed in injuring themselves. The supplies available for international distribution will remain much the same; the price of food will go up and increasing quantities of industrial products will have to be sold in order to procure the same amount of food. Available supplies will be distributed unfairly and the industrially weakest will go to the wall, however urgent their need. These results are bound to follow unless the food exporting countries of the world increase agricultural productivity at a faster rate than their own rate of growth of population *and produce increasing surpluses to match increasing deficits in India and Europe.* This will not happen. It follows that industrialisation is not the answer to the food problem; the widespread belief to the contrary is a fallacy, based on a misreading of history.

This does not mean that development of industry is unnecessary or unimportant. Far from it. But, we should be clear about why we need it. We need it, in order to provide ourselves with those goods and services which add to the comforts and conveniences of life and to make life and work less laborious. Industrailisation will not help to solve our food problem, except indirectly to a limited extent in so far as it can provide the materials needed for the development of agricultural productivity.

So then, we have reached two conclusions. *One is*: that we cannot grow as much food as we shall need, if we go on increasing in numbers as we do. *The other is*: that if we do not grow more food, we must eat less food.

What follows—that starvation is our lot? *No.* It follows that we should make up our mind that we shall not go on increasing in numbers as we do. We should realise that it is improvident on our part to permit ourselves to increase in numbers indefinitely without taking thought of how our children and our children's children are to live; and we should resolve to put an end to this increase as soon as possible.[28]

CAN HIGH BIRTH RATES BE CHANGED QUICKLY?

The cultural mores which kept birth rates high in western indus-

trial nations were changed slowly. Under the impact of industrialization and urbanization, the small-family pattern finally emerged. Dr. Notestein has analyzed this process in these words:

> In the Western world, factory employment and other complex arrangements of modern city life have taken away many of the economic, educational, and recreational functions of the family and larger relationships. Women have found new alternatives to early marriage and continuous childbearing as means of providing livelihood and prestige. Popular education has weakened the hold of old taboos and widened the horizons of knowledge and aspiration. In mobile city populations, the individual has come to be judged much less by the station into which he was born and much more by his abilities and possessions. Gradually, the primary importance of the family and of larger kinship groups has given way to new emphasis on the welfare and opportunities for advancement of the individual. With the emergence of new aspirations for the children, training becomes expensive and opportunities for economic contributions by children decreased. Under these multiple stimuli, old ideals, centering on a large family, began to give way to the new ideal of a small number of children for whom better opportunities could be provided. As a result, the rational control of fertility, mainly by means of contraception, began to spread throughout the modern societies, bringing in its train the low birth rates with which we are familiar in the Western world.[29]

In some instances, there was strong stimulus other than industrialization. Long before the potato famine decimated the Irish population in the 1840's, the age at marriage had begun to increase and the birth rate had begun to decline among the country people.

During the past decade, two countries whose people are predominantly Roman Catholic have recorded sharp birth rate declines. Puerto Rico's rate has declined from 42.2 in 1947 to 34.8 in 1955; Italy's birth rate has dropped from 22.2 to 18.1.[30]

DRASTIC MEASURES SPEED PROCESS IN JAPAN

Today, demographers have their eyes on Japan, the only oriental culture which has thus far developed large-scale industrialization and urbanization. In 1948, Japan in effect legalized abortion and sterilization for economic and social reasons. It has been reported that in 1953, there were about 572 abortions per 1,000 live births.[31]

As a result, Japan's postwar birth rate reduction has been the most spectacular in history: from 34.3 in 1947 to 19.4 in 1955. Her birth rate then was well below that of the United States (24.6) and approached the rate of the United Kingdom (15.4).[32]

Japan's population growth rate has been greatly reduced. In 1947, the rate of natural increase was 2.0; it was only 1.2 percent in 1955. If the present trend continues, the Japanese population will have reached its maximum by about 1980.

Does Japan suggest a solution to the dilemma in underdeveloped countries? Hardly, because abortion and sterilization are not acceptable methods of birth control in many countries. Furthermore, the sobering fact is that Japan experienced a population explosion later than but comparable to that of the western nations while passing through

the demographic gap. The beginning of the modernization of Japan roughly coincided with the Meiji Restoration in 1868. Then Japan's population was about 35 million.[33] Today, she has 90 million, and the demographic gap has not yet been closed.

Japan still faces serious population problems even though her rate of growth is declining. She must import much of her food needs. Unless she can sell her manufactured goods to earn the exchange needed for food, the future of her people is one of near starvation. By 1980, the population of Japanese men aged 20 to 64 may very well increase by two-thirds.[34] Unless Japan's economy can be expanded by two-thirds, serious unemployment problems will develop.

A FEW RAYS OF HOPE

Ten years ago, no country on earth had developed a plan for controlling too rapid population growth. Today, several underdeveloped countries are taking various steps to come to grips with this problem.

India: The Second Five Year Plan has increased the amount of money allocated for the purpose of checking population growth to 50 million rupees (about $10,500,000).

The program includes grants to state governments, local authorities and voluntary organizations for 300 urban and 2,000 rural clinics expected by 1961; personnel training; nation-wide family planning education; research in human fertility and in demography.

Research will be conducted in an effort to develop simple, economical and effective contraceptives.

The Government of India and the Population Council, Inc., of New York, will jointly sponsor a project designed to "explore family planning attitudes and motivations and to educate the people in simple contraceptive methods not requiring large-scale clinics." This three-year study will be conducted in rural West Bengal with an estimated budget of $48,000. It will be directed by Dr. C. Chandrasekaran.[35]

Health Minister Rajkumari Amrit Kaur has recently become convinced that one of the most serious problems which India faces is population control. Toward that end she has called for "a planned and scientific approach to the problems of family life which should be the main objective of a national campaign for family planning." Stressing the importance of the program, the Health Minister said that "I believe in this . . . our people are alive and anxious to be helped and educated."[36]

Ceylon: Here a special study of fertility differentials, based on a sample (from the 1953 Census) of women who have ever married, indicates the average size of completed families is considerably smaller in urban areas among people with higher education and income. It appears that the relatively small group of highly educated urban Ceylonese has, to a considerable extent, adopted the small-family pattern of the western world.[37]

Egypt: The government has recently recognized the necessity of reducing the phenomenal rate of population growth (about 600,000 people a year). In an effort to cope with the problem, the Permanent Council for Public Welfare Services established the National Commission for Population Problems in December 1953. The Economic Subcommittee of this Population Commission published a report in 1955.

This report explores with remarkable realism the relationship between Egypt's population and its economic resources. The urgent necessity to reduce the rate of population growth is fully recognized by the government: "Under present circumstances it is possible to state that the rapid growth in population is in itself an obstacle to economic development and the spread of public services in Egypt; it also prevents the great majority of people from getting an income which would ensure a standard of living compatible with the hopes that they had fostered with the coming of the new regime."[38]

Mainland China: Evidence indicates that the Communists are becoming increasingly aware that China's future is inexorably tied to the speed with which the reproductive pattern of the 3500-year old culture can be changed. They seem to be creating a stimulus in the form of an extensive propaganda campaign. This is now chipping away at the foundation of China's ancestral mores. The methods and arguments used in this campaign clearly show that the Communists know what measures have successfully reduced birth rates elsewhere. They are strongly advocating contraception and permitting some abortion and sterilization. Taking a leaf from the history of Ireland, they are urging late marriage among the young people as another means of promoting the small-family pattern.[39]

The *United Nations* has made an outstanding contribution, during the past decade, in the long, uphill road to universal understanding by focusing world attention on the population problem.

Within the United Nations' Secretariat, a small group of dedicated workers in the Population Branch have kept track of many ramifications of population growth. Many projects are done in cooperation with various regional economic commissions and with UNESCO, WHO, FAO. Many of the reports published are classics of demographic science. The *Demographic Yearbook* published by the Statistical Office of the United Nations with the assistance of hte Population Branch has become the "Baedeker" of demography. It is lamented in many quarters that budget cutbacks in the past two years have curtailed this work.[40]

One year ago, the *International Catholic Institute for Social Research* in Geneva, Switzerland, announced a contest with a $5,000 prize for an essay on the solution to the problem of overpopulation in underdeveloped countries. This seemed to indicate that there was

virtual unanimity in the Christian world that runaway population growth is dangerous. The stumbling block now seems to be the methods by which births may be limited.[41]

If this impetus in awakening continues, the forces of education and communication may be marshalled while there is yet time to check population growth rates before catastrophe strikes.

ROBERT C. COOK, *Editor*

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PRB SUMMER WORKSHOP

Six graduate students from the fields of demography, sociology, conservation, economics or geography will be chosen to attend the Population Reference Bureau's Sixth Annual Summer Workshop to be held in Washington, D. C., June 17-July 26, 1957.

Participants will receive a grant of $300 toward transportation and subsistence. Applications should be submitted before March 30, 1957, to Mr. Robert C. Cook, Director, Population Reference Bureau, 1507 M Street, N.W., Washington 5, D. C. Each application should explain how the student's major subject is related to the population problem and should be accompanied by two supporting letters from professors, instructors and/or faculty advisors.

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